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SCIENCE NEWS LETTER

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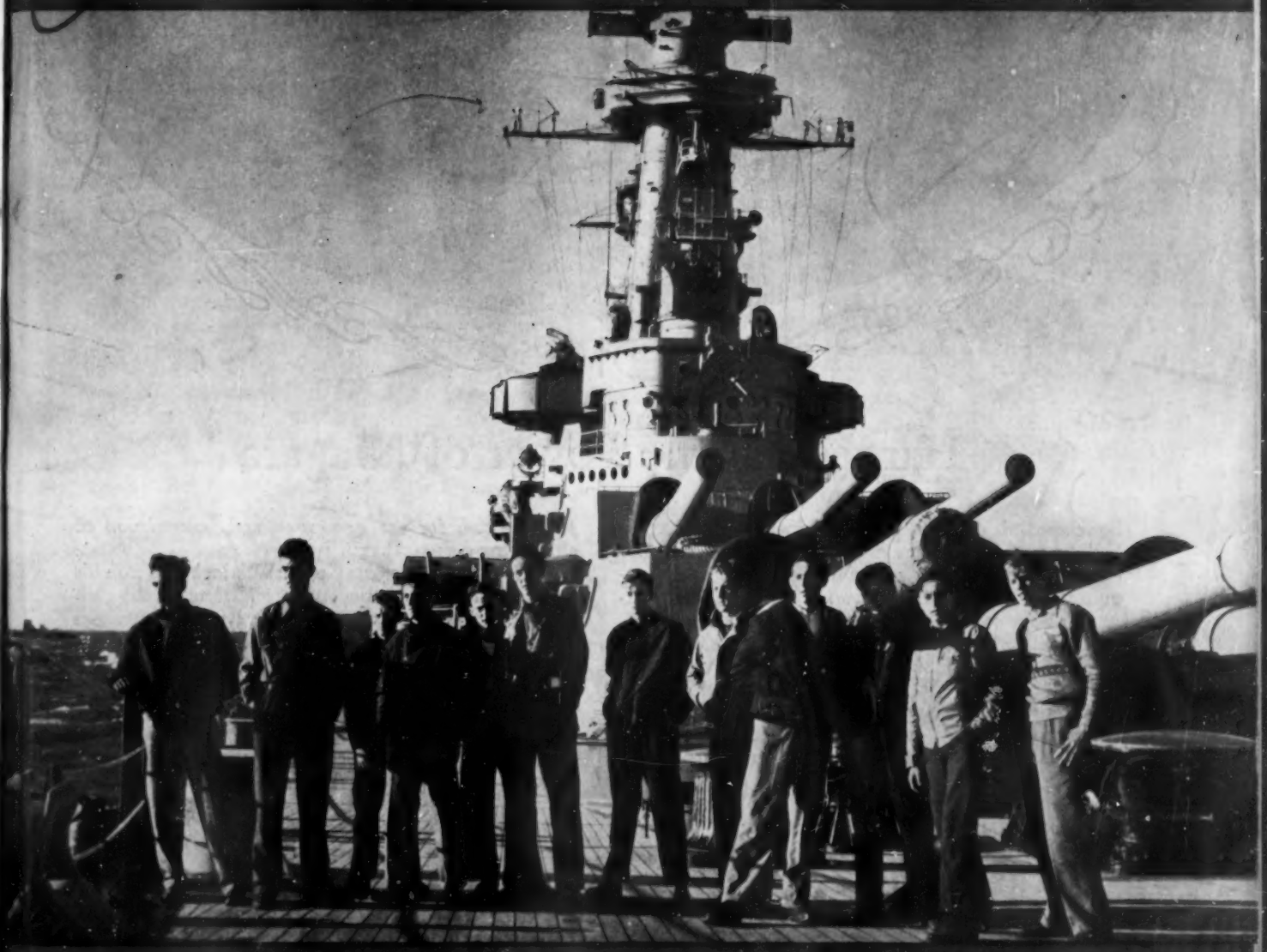
THE WEEKLY SUMMARY OF CURRENT SCIENCE • OCTOBER 19, 1946



Navy Science Cruisers

See Page 248

A SCIENCE SERVICE PUBLICATION

1921 TWENTY-FIFTH ANNIVERSARY 1946

1846 GEORGE WESTINGHOUSE CENTENNIAL 1946

Harnessing the Power of Niagara

For thousands of years, water had roared over Niagara Falls at the rate of about *200,000 cubic feet per second* —representing enough power to supply the annual requirements of *24,000,000 average homes.* This enormous power continued to go to waste until...

In the late 1880's, a group of world-famous engineers began to study the problem of harnessing the vast power of Niagara Falls.

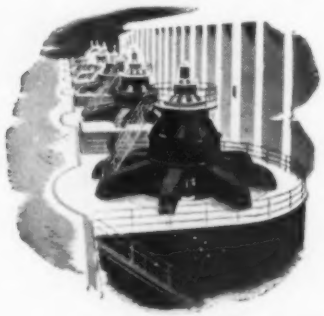
A bitter controversy raged for years as to whether *alternating* or *direct* current should be used. George Westinghouse, the world's greatest authority on alternating current, vigorously supported the *a-c system.*

Then, at the Chicago World's Fair in 1893, Westinghouse demonstrated the unqualified supremacy of the *polyphase system* for the *generation* and *transmission* of alternating current electricity.

In October of that year George Westinghouse won his famous "battle of the currents"—and received the contract for three 5,000-horsepower polyphase generators to be installed at Niagara Falls.

These world's largest a-c generators had to be engineered from the ground up. But within two years, the three mammoth units were placed in operation. And a year later electric power was supplying the needs of Buffalo, N.Y.... *20 miles away!*

It was a major victory for mankind as well as for George Westinghouse—for it *set the pace for power development all over the world.*



Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

TODAY—The Westinghouse Electric Corporation supplies much of the world's needs for the generation, transmission and utilization of electric power. For instance, throughout the world there are Westinghouse water-wheel generators with a total capacity of more than 12,000,000 kva. In addition, steam and engine-driven generators, with a combined capacity of *many more million kva,* proudly bear the Westinghouse name plate.

Tune in: TED MALONE, Monday, Wednesday, Friday, 11:45 am, EST, American Network.

ASTRONOMY

Heavenly Fireworks Flash

Century's most brilliant meteor shower was seen by many observers on Oct. 9. Some counted as many as 100 falling stars a minute.

➤ THE GREATEST and most brilliant meteor shower of the century occurred on Oct. 9, probably excelling even the 1933 shower caused by the same Giacobini-Zinner comet.

Reports to Science Service from far-flung points indicate some meteors so bright that they outshone Sirius, the most brilliant star in the heavens. Some would have cast shadows had there been no moon, concludes Prof. C. C. Wylie of the University of Iowa.

Astronomers in parts of the east had to take to airplanes in order to get above obscuring clouds. Observers on the Pacific Coast reported a spectacular display, undimmed by moonlight interference in its early stages. Army weathermen report the display was seen in Germany.

A hundred meteors a minute flashed across the sky for stargazers at Berkeley, Calif., reports Dr. Leland E. Cunningham of the University of California's Student's Observatory. From Norman, Okla., Dr. Balfour S. Whitney of the University of Oklahoma states that one observer counted 2,850 "falling stars" during one hour. At Madison, Wis., several observers reporting to Dr. C. M. Huffer of Washburn Observatory counted 1,500 in an hour. Two or three meteors a second flew over observers in Eugene, Ore., Prof. J. H. Pruett of the University of Oregon states.

Within an hour and a quarter 3,003 "shooting stars" had been counted by Walter S. Houston of Cincinnati, Ohio, member of the American Meteor Society. At the height of the shower he counted 510 meteors within five minutes.

During one five-minute period, 23 meteors shone through cirrus clouds at Lawrence, Kans., to be seen by Prof. N. W. Storer of the University of Kansas. Breaks in the clouds permitted observers within five minutes to count 117 meteors, most of them as bright as the brightest stars visible. Within five minutes Dr. Ralph B. Baldwin of Grand Rapids, Mich., counted 57 meteors, although the sky there was only one-third clear.

High in a Coast Guard plane, Harvard astronomers during one minute counted through the clouds 23 meteors, including three brighter than Sirius.

Astronomers are particularly pleased with the fact that the shower came at the predicted hour, reaching its maximum around 9:40 EST. The height of the shower seems to have been shorter-lived than the display in 1933, when the earth earlier plowed through cosmic dust left by the faint comet.

At the time of the shower, the earth was within 135,000 miles of the path taken by the Giacobini-Zinner comet, as compared with 500,000 miles during the recent historic shower. The comet had sped by this heavenly intersection just eight days previously.

In one hour, more meteors were seen than in a normal lifetime.

By the time darkness had fallen over the Americas 13 years ago, the shower of "shooting stars" was barely detectable. Reports reaching Science Service through the Army Air Forces' Air Weather Service show that a meteor shower, though probably not as brilliant as the one here, was visible in Europe. In Zug Spitze, Germany, 105 meteors were seen during a ten-minute interval.

At Goose Bay, Newfoundland, 33 were counted during one ten-minute interval, and 11 at another. Observers in the tropics, however, were less fortunate. Only a few were seen during the evening by sky-searchers in British Guiana and Trinidad.

Clouds Block Shower

Although clouds cheated star lovers throughout a large part of the United States of a chance to see the display of "shooting stars," meteors flashing across the sky every minute or two were "seen" by means of radar.

Radio engineers at the Bureau of Standards' ionospheric station at Sterling, Va., used a war-time radar set to detect the passing of these bullets from space. The Army Signal Corps' laboratory at Belmar, N. J., recorded the "falling stars" by radar. Meteors streaking across the heavens were counted on the radarscope at Harvard's Oak Ridge station.

This is the first time a meteor shower has been observed by means of radar. Echoes from meteors 80 to 100 miles above the earth, just like echoes from the moon, appear as "pips" on the scope screen.

During the height of the shower, meteors registered themselves on the radar screen every minute or two. It was not the meteor itself, but its tail of winged particles that registered on the scope. Twelve were "pipped" in an eight-minute period. And yet the radar beam, which was fixed instead of revolving, encompassed only about three percent of the sky, which will give some idea of the height of the storm.

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MEDICINE

Bacteriologist Receives Gorgas Medal for Service

➤ BRIGADIER GENERAL Raymond A. Kelser received the 1946 Gorgas Medal, sponsored by Wyeth Incorporated of Philadelphia, and awarded by the Association of Military Surgeons of the United States for outstanding work in preventive medicine for the armed forces. During World War II General Kelser served as director of the Veterinary Division of the Surgeon General's Office of the U. S. Army and did prominent work in eradicating rinderpest, a cattle disease, in the Philippine Islands, enabling the Filipinos to have their own domestic milk supply. General Kelser is now dean of the College of Veterinary Medicine and professor of bacteriology at the University of Pennsylvania.

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BACTERIOLOGIST — Brigadier General Raymond A. Kelser, recipient of the Gorgas Medal.

BIOCHEMISTRY

Enzymes Affect Cancer

➤ LOOK TO STUDY of enzymes for the solution of the mystery of cancer and possible chemical cure for it, Dr. Van R. Potter, associate professor of cancer research at the University of Wisconsin, told members of the American Chemical Society in Omaha.

Pepsin, a chemical in stomach juices which helps digest food, is an enzyme many laymen have heard about. There are many others in the body which scientists know and are studying. Prof. Potter explained the function of enzymes as follows: "Enzymes act somewhat like switchmen in a railroad yard or like valve-operators in a chemical factory, determining which way the materials of the body shall be used. In cancer cells, defective enzyme systems would act like saboteurs in a switchyard, sending trains off on the wrong track. These switchmen, which we call enzymes, no longer need to be thought of as vague influences. Thanks to the work of hundreds of chemists, we know that, like vitamins and hormones, enzymes are definite chemical compounds, except that their structures are even more complicated. Like other chemical compounds, enzymes can be subjected to quantitative chemical analysis, using the specialized methods of enzyme chemistry."

He traced the course of progress in the case of one particular class of enzymes, the energy-transformers, and showed how discoveries in the decade between 1930 and 1940 led to a simple concept of how foodstuffs are oxidized in the body, and how the resultant energy is stored in chemical reservoirs instead of being converted wholly to heat.

Prof. Potter showed how he had used this work on normal tissues as a blueprint for the study of the enzymes of cancer tissue. It was found that certain enzymes which were abundant in some normal tissues like liver and kidney were scarce in tumor tissues, while other normal tissues such as lung, spleen and skin had even less than the tumors.

"What is needed," he said, "is a measuring stick to tell us how much of an enzyme a particular tissue needs. In other words, in order to know whether you have enough gasoline in your car, you need to know the distance between you and the next filling station."

In summarizing the facts accumulated thus far, Prof. Potter added: "This body of knowledge is a beachhead from which further attacks on other phases of cancer metabolism can and are being launched. For the fullest exploitation of this beachhead we need the help of the fundamental investigators who keep supplying us with new blueprints. I am confident that the mystery of cancer will ultimately be explained in terms of enzymes, and when that time comes, we can be more helpful about looking for methods of chemotherapy."

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MEDICINE

Mixture Speeds Recovery

➤ YOU WILL spend a third less time recuperating from your next operation or serious illness if your doctor applies a feeding lesson learned in treating war wounded and starving victims of concentration camps.

A mixture of powdered egg and powdered milk, which tastes like egg nogg or ice cream and can be poured down your throat if you are too sick to sip it from a spoon, is the food you will get, plus a little water.

Speed-ups in recovery achieved by this diet, called a "revolutionary innovation in the basic care of the sick," were reported by Dr. Herbert Pollack, of Mount Sinai Hospital, New York, at the meeting of the American Chemical Society.

As chief medical consultant for the Army in the European Theater, Dr. Pollack worked with concentration camp victims while the bullets were still whistling overhead.

Of 92,000 soldiers liberated from German prison camps and treated with this bland diet, only eight died, he reported, although 40% of them suffered from severe malnutrition and at least 80% were undernourished.

At Recovered Allied Military Prisoners camps, there was an average daily sick call rate of over 20% when the men were fed an ordinary Army ration. About four-fifths of the complaints were due to stomach and intestinal disturbances. One week after introduction of the bland diet, the sick call rate dropped to 4%. There were no cases of nausea and vomiting and only 15% of the complaints were due to intestinal disturbance.

The egg and milk mixture sped Army wounded and post-operative patients in Europe back to duty in about one-third the average time.

The high protein content of the mixture, together with its high calorie value from the fat and carbohydrate it contains, and its lack of irritation to stomach and intestines constitute its advantages.

"Prolonged convalescence will be a rarity," Dr. Pollack predicted, when this war lesson is applied.

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ANTHROPOLOGY

Ancient Melbourne Man Gets Remodeled Skull

➤ FLORIDA'S ancient Melbourne man has a remodeled skull—and a new claim among the earliest inhabitants of this continent.

The remodeling was done by Dr. T. Dale Stewart, curator of physical anthropology of the Smithsonian Institution, after searching for and finding bone fragments, missing from the crushed human skull discovered about 20 years ago near Melbourne, Fla.

Most anthropologists identified the original round skull, crudely reconstructed, as that of a "recent" Florida Indian. Dr. Stewart tore the skull apart and refitted the pieces with the newly-found fragments into a long-headed skull, similar to the earliest human skeletal remains in this country.

Stone arrow heads, lying directly under the bones of a prehistoric mammoth at the original Melbourne excavation, strengthened the much debated theory that humans and mastodons lived in Florida at the same time—possibly 10,000 years ago, near the end of the last ice age.

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MEDICINE

Control Measures Halt Japanese "B" Encephalitis

➤ VACCINATION and mosquito control have virtually eliminated the danger of Japanese "B" type encephalitis to American service personnel in the Orient.

This is the statement of Harold F. Gray, University of California mosquito control expert, who has returned from a mission to Japan for the War Department.

Only isolated cases of this so-called sleeping sickness are likely to occur among American service personnel in the future, Gray says. Army medical authorities have made American bases virtually mosquito-free islands. Gray pointed out that no cases have occurred among service personnel in Japan this year.

Reasons for the absence of any cases are that the number of cases among the Japanese was low this year, and mosquito control and vaccination appear to be effective countermeasures.

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NEW SKULL—Dr. Dale Stewart, anthropologist of the Smithsonian Institution, inspects the skull he has remodeled. The skull at the right is the original crudely reconstructed one.

MEDICINE

Q Fever Is Widespread

It is believed that an outside carrier of this disease exists, possibly mites. Better methods of diagnosis must be developed.

➤ THE "Q" in Q fever may well mean questions unanswered.

Widespread outbreaks of the disease, often diagnosed as influenza or a form of virus pneumonia, suggest that better methods of detecting the disease must be developed, warns an editorial in the *Journal of the American Medical Association* (Oct. 12).

Studies of an epidemic of Q fever among troops returning to the United States from Italy showed that approximately one-third of a group of 1,683 soldiers was infected. Although no proof of the course of infection or mode of transmission could be found, it was believed that an outside carrier existed.

Outbreaks among troops in Italy, Greece, and Corsica suggested that mites riding on particles of dust from hay and straw may carry the Q fever germ. Ticks infected with the germ, Rickettsia burneti, have been found in many parts of the United States. Whether pigeons, rats, mice, cattle and lower animals serve as reservoirs of infection is another unsolved question.

Further evidence that the disease is more widespread than originally believed came from an outbreak of Q fever among laboratory workers at Fort Bragg. In this outbreak the principal source of infection was believed to be infected egg embryos with the germ spread by airborne droplets.

Diagnosis of Q fever is complicated by the similarity of the germ to the pneumonia virus and other filtrable viruses. The rickettsia germ passes through filters like a virus, but it is large enough to be seen under the microscope. The Australians who discovered the infection in 1935 dubbed it "Q" fever, a kind of pneumonia. The exact relation between Q fever in Australia and viruses of atypical or virus pneumonia in this country offers another question for further investigation.

Symptoms of Q fever may include fever, chills, sweats, weakness, muscle aches, frontal headaches, chest pain, occasional mild abdominal cramps and diarrhea.

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EDUCATION

Navy Science Cruisers

Ninety-one science-minded high school boys study science afloat, sailing with the U. S. Navy for four days on Atlantic course.

See Front Cover

➤ THE DREAMS of millions of American youths came true for 91 science-minded high school boys selected as the first Navy Science Cruisers to sail with the Navy for four days, studying science afloat in Uncle Sam's fleet. The unique cruise that packed excitement with education was sponsored by the Office of Naval Research, aided by Science Clubs of America, administered by Science Service.

A group of the science cruisers is shown by the 16-inch guns of the USS Washington on the front cover of this SCIENCE NEWS LETTER.

Chosen by local scientific organizations for their interest and ability as young scientists, cruisers from New York, Pittsburgh, Providence and Philadelphia flew to Washington in Navy planes to join a group from Washington, Sunday, Sept. 29.

Traveling to Annapolis by bus, the boys took small boats out to the USS Randolph, historic aircraft carrier that served as Admiral Mitscher's flagship when he commanded the famed Task Force 58 in the Pacific during World War II.

Navy specialists took the boys on tours of the ship, explaining details of the multiple scientific applications that make a modern fighting ship, but the big thrill for the cruisers came Monday morning as the ship ploughed out 100 miles into the Atlantic off Cape Henry. As the giant floating air terminal steamed into the wind, eight of her aircraft took off to start a two-hour air show that included qualifying landings for some of the pilots and was climaxed by a mock attack on the ship by fighters and bombers.

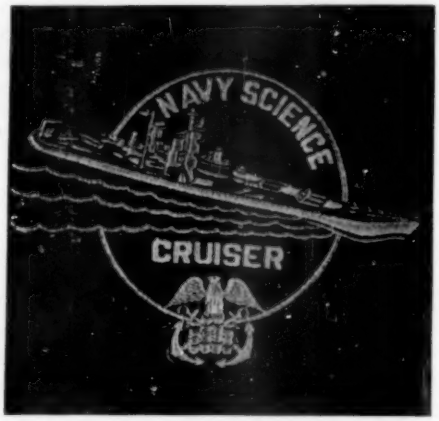
After the USS Randolph docked at Yorktown, Va., the boys went ashore Tuesday morning to mix history with their science on tours of historic Yorktown and colonial Williamsburg. That afternoon it was "back to sea" aboard LCI's, Landing Craft Infantry, that took the cruisers out into Chesapeake Bay to board battleships. The party was divided; one group sailed on the USS Washington and the other on the USS North Carolina.

Cruising up the Atlantic Coast to New York, the young sailors got their first taste of gunfire as the big battleships fired some of their batteries. At night, signal pyrotechnics were mixed with tracer fire from the guns as searchlights played against the clouds.

Landing in New York Thursday morning, the boys went to Floyd Bennett Naval Air Station to board planes that took them to their home cities.

After nearly five days in the Navy, the cruisers admitted that they had been thrilled by the planes and guns, but most of them had found other interests too. Young engineers had learned about the giant turbines that power the Navy's capital ships. High in the superstructures, they had seen the electronic equipment that brought victory in battle and

(See next page)



BADGE—This brassard was worn by the high school students that sailed as Navy Science Cruisers

SHIPBOARD SCIENCE—Navy Science Cruisers inspecting steering equipment in the wheelhouse of the USS Washington at sea.

MEDICINE

Iron-Binding Compound Is Found in Human Blood

➤ DISCOVERY of an iron-binding component in human blood may lead to new treatments for some kinds of anemias and to new attacks upon some diseases like dysentary.

Following up finding of a protein in white of egg that has an affinity for iron, Dr. Arthur L. Schade and Leona Caroline of the Overly Biochemical Research Foundation, New York City, report the presence in human plasma of a similar substance.

In a communication to *Science* (Oct. 11), they suggest that this substance regulates the absorption of iron from the food tract as well as the transport of iron by the blood throughout the body.

LEARNING HOW—Navy Science Cruiser Keith Seegmiller, (left) 16, a Washington, D. C. high school senior, learns the signals that bring airplanes down safely on the deck of the USS Randolph with the flight deck officer as his teacher.

opened new fields for peacetime advances. Behind the menacing barrels of giant guns lay intricate scientific instruments. On the flight deck of the aircraft carrier they saw the catapults and landing gear that may do important jobs ashore at future airports.

Newspapers cooperating with Science Clubs of America on the Navy Science Cruiser program included The Washington Daily News, Providence Journal, Pittsburgh Press and the New York World Telegram.

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PLANT PATHOLOGY

Disease Kills Citrus Trees

➤ AN ANNIHILATING disease of citrus fruit trees, that sweeps through orchards like fire and unsparingly kills every standard-grafted orange, grapefruit and tangerine tree it touches, was described by an eminent Brazilian plant pathologist, Dr. Agisilao Bitancourt of the Institute Bionomico of Sao Paulo, before an anxious audience of U. S. Department of Agriculture scientists.

"Tristeza" is the name of the disease; the word means "sadness" in both Portuguese and Spanish. It is highly appropriate, Dr. Bitancourt commented: the trees surely look sad as they stand wilting and dying, and the hearts of their owners are sadder still.

Already at least half of all citrus fruit trees in southern Brazil, northern Argentina, and the small countries of Uruguay and Paraguay have been attacked. Many are dead, and the rest doomed without reprieve. There are indications of its possible existence in this country, but the case is still not proved.

Tristeza is a unique plant disease: it will not attack any tree that stands on its own roots; its only victims are orange, grapefruit and tangerine trees grafted on sour-orange roots. Sour orange, an inedible citrus species, has long been used as standard grafting stock because of the hardiness of its roots and their resistance to diseases—until tristeza came along.

When tristeza hits a tree, nothing much may happen at first. Then it starts into a swift decline, its leaves wilting and dropping off, and its rootlets rotting away. Before long it is dead.

Chemical analysis of bark and wood near the place where the two grafted parts are joined shows plenty of protein and carbohydrate above the line, none below it. Something about the disease prevents the foods prepared in the tree's top from getting down to its roots. Victims of a physiological traffic jam, the roots starve to death. Then the top dies from lack of water and minerals. It is about the same thing that happens to a tree that has been ringed or girdled.

There is some reason to believe that tristeza is caused by a virus, one of those strange nearly-living proteins whose big, complex molecules can pass through fine porcelain filters. There is some evidence also that it is carried from tree to tree by an insect. But thus far the virus has not been isolated, nor has the vector-insect been identified. Those are two of the problems on which American scientists, who have gone to Brazil to establish our first line of defense there, are now working side by side with their Brazilian colleagues.

It is highly important that the cause of tristeza be identified soon, Dr. Bitancourt declared in closing, because no known method of plant quarantine will avail to keep it from spreading to a new country.

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BOTANY

"Lost" Species of Rubber Tree Is Rediscovered

➤ A "LOST" SPECIES of Brazilian rubber tree, small, stiff of leaf, scanty of sap but hardy and tough, has been rediscovered on the thin soils of half-barren granitic hills in the upper Amazon valley by botanists of the U. S. Department of Agriculture.

The species was first studied and described by Richard Spruce, a British botanist, about 100 years ago. He named it *Hevea rigidifolia*, for its stiff leaves. The widely cultivated plantation rubber tree is *Hevea brasiliensis*. After its first discovery, no one saw it again until the American scientists pushed into its remote habitat recently.

This stiff-leaved Hevea appears at first glance to be not much better than a poor relation of the cultivated species, for it has not enough rubber to pay for extraction. However, the qualities of toughness and resistance to both drought and disease that enable it to survive on its hard-bitten hills may prove to be just the touch of plebian blood needed to add strength to the family stock of the rich but not-too-robust *Hevea brasiliensis*.

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CHEMISTRY

Fluorine Research Leads to Making of New Compounds

➤ WARTIME IMPROVEMENTS in the technique of preparing fluorine, exceedingly active gas related to chlorine, are already resulting in the first commercial productions of fluorine compounds hitherto regarded as chemically possible but commercially impracticable. Two patents, 2,408,784 and 2,408,785, cover a process for preparing anhydrous monofluorophosphoric acid, an ingredient of effective insecticides, and useful also in certain reactions as a catalyst.

All that is necessary is to mix four or five parts of thoroughly dry metaphosphoric acid with anhydrous hydrofluoric acid, with careful precautions to exclude all moisture, and then shake at room temperature or warm gently. The resulting compound is a clear, oily liquid that somewhat resembles concentrated sulfuric acid. It becomes a glassy solid at a little below minus 30 degrees Centigrade.

Willy Lange and Ralph Livingston of Cincinnati, who claim that this compound has never been successfully prepared before, have assigned their patent rights to the Ozark Chemical Company.

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MEDICINE

Milk May Help Prevent Cancer of the Liver

➤ FRESH MILK may play a part in preventing cancer of the liver, Dr. Cornelia Hoch-Ligeti of the Royal Cancer Hospital, London, England, suggests in a report to the American Association for Cancer Research.

Rats that got some fresh milk to drink daily were protected to a considerable extent from the development of liver tumors which these animals get when fed a cancer-causing dye.

Translating results of experiments with rats to terms of human disease is dangerous, Dr. Hoch-Ligeti points out. But cancer of the liver occurs very frequently in Africa and certain parts of Asia. Diet habits differ among inhabitants of these regions and complete information on how much milk they drink is lacking. It seems unlikely, however, that drinking milk is a daily habit of these people.

Lack of milk in the daily diet may not be the only cause of liver cancer in man. Rats on deficient diets did not develop cancer. It took the combination of the poor diet and the cancer-causing dye to produce the cancers. Similarly in man, Dr. Hoch-Ligeti suggests, some cancer-causing agent may be concerned but its effect blocked by fresh milk in the diet.

Whatever it is in milk which protects the rats and maybe man from a liver-cancer-causing agent is not known. Apparently this unknown is destroyed when milk is dried.

Dr. Hoch-Ligeti is going to carry out further experiments to clear up the mechanism of the protecting effects of milk.

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SEISMOLOGY

Santo Domingo Earthquake Continues Disturbances

➤ THE SANTO DOMINGO earthquake series which is still going on more than two months after the shock of Aug. 4, bids fair to set a record as one of the really outstanding earth-disturbances of the present century. A new quake in the same region, at 9:45 a.m. EST, on the morning of Oct. 4, was nearly or quite equal to the original shock of Aug. 4, according to measurements of instrumental records made by seismologists of the U. S. Coast and Geodetic Survey.

The Aug. 4 and Oct. 4 shocks were both at least as violent as the one that initiated the destruction of San Francisco in 1906, the seismologists said. Only two earthquakes since 1904 have been stronger. The first, in 1906, was on the Colombia-Ecuador boundary; the other took place in Tien Shan province of China in 1911. The one reason why the capital of the Dominican Republic, Ciudad Trujillo, has not suffered more damage from the almost continuous trembling of the earth is that the epicenter, or point of greatest disturbance, is under the sea some miles off the coast.

Experience with this notable earthshock series has stimulated Dominican authorities to set up a seismological observatory of their own, which they have hitherto lacked. They now have a temporary station, replacing one which was maintained by the U. S. Coast and Geodetic Survey for a time. They plan, however, to make a permanent installation, and also intend to send students to study seismology in the United States.

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IN SCIEN

INVENTION

Simplified Traffic Light Eliminates Time Switches

➤ A TRAFFIC light that operates with only four electric lamps, eliminates the amber warning signal, and needs no time switches is the subject of U. S. patent 2,407,382, granted to Frank T. Powers of Glen Cove, N. Y.

Instead of having fixed lamps that are lighted and extinguished by the operation of time switches, the new device has two pairs of lamps, mounted at right angles on a shaft that is turned at the proper time intervals by a motor-driven mechanism in the base. Each lamp is enclosed in a parabolic reflector, with a red or green lens or filter over its face. It is unnecessary to have an amber warning signal with this setup, the inventor states, because just before the light changes, both colors are momentarily shown, one above the other.

Obviously, with this system, two positions for the two light colors would not be necessary. It would seem desirable, however, to retain a two-position system because color-blind drivers depend on the position rather than the color of the light for their traffic information.

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HERPETOLOGY

Rattlesnake Dies from Bite of Rattlesnake

➤ RATTLESNAKES are not immune to each others' poison, as is often claimed. Fresh evidence on this point is offered by Dr. H. K. Gloyd and W. A. Bevan of the Chicago Academy of Sciences.

Two Great Basin rattlesnakes in the Lincoln Park Zoological Garden in Chicago, they state, somehow got into a fight, and each struck the other several times. One of them, which had been bitten on the head and also on the body near the spleen, was found dead the following morning. The other suffered a badly swollen head and neck and showed signs of great distress lasting until the next day, but finally recovered.

Science News Letter, October 19, 1946

E FIELDS

MEDICINE

Chewing Paint on Toys Is Not Poisoning Risk

➤ PAINT-CHEWING children run no risk of lead poisoning, unless they attack the paint on the outside of the house, Felix E. Wormser, secretary of the Lead Industries Association, told the seventh annual Congress on Industrial Health in Boston. Cribs, toys and furniture that babies are likely to chew are not painted with white lead paint.

Lead hazards in industry and to the public are on the downgrade, thanks to modern safety precautions, Mr. Wormser said.

Prompt X-ray examination of persons stricken with convulsions and nausea will tell whether they have lead poisoning and will lessen the poison toll.

Science News Letter, October 19, 1946

AGRICULTURE

Methoxone, Weed-Killer, Increases Britain's Crops

➤ METHOXONE, a weed-killing chemical related to the 2, 4-D now being used in the United States, has shown itself able to increase the per-acre yield of wheat, in extensive field tests carried on in Britain during the past three years. Mobile dusting units have applied the compound to not less than 13,000 acres, which have returned harvests stated to average 22% greater than those from untreated fields.

It is known that similar experiments with 2, 4-D have been conducted on grain fields in Canada and the United States; but the more extensive tests in Britain have been spurred by the necessity for obtaining maximum food returns from this country's much smaller producing area.

The value of Methoxone as a weed-killer was discovered almost by accident, during the course of experiments on the nature of growth-promoting substances at Jeallot's Hill, one of England's leading agricultural research stations. It was found that a considerable number of these substances killed certain plants if used in sufficient concentration, but left others unharmed. Notable among the unharmed plants were members of the grass family, which includes all grains. By a fortunate circumstance, among the most easily killed weeds are members of the mustard family, to which belong such plants as the charlocks, treacle mustard and pennycress, among the worst grainfield weeds in Britain.

It is hoped that Methoxone may prove useful also in combating malaria and the mosquito pest generally, by keeping down water-weed growths that make favorable conditions for the breeding of certain mosquito species.

Science News Letter, October 19, 1946

TEXTILES

Army All-Purpose Coat Shuts out Water, Wind

➤ THE POSTWAR Army has a new all-purpose coat designed to repel water and resist wind. Now under test by the Quartermaster Corps is a new trench coat with removable lining and leg attachments to protect trousers.

With an inner shell of five-ounce poplin and an outer shell of nine-ounce sateen, the coat has a liner of 21.5-ounce napped wool. The leg protectors are made of sateen and can be folded up and buttoned inside the coat when not being used. In use, the leg attachments are fastened with zippers.

The coat weighs seven-and-one-half pounds with the lining and five pounds without it. Eleven sizes of the new garment for both enlisted men and officers are being ordered, the Quartermaster Corps reported.

Science News Letter, October 19, 1946

HERPETOLOGY

Frogs Develop "Leprosy" When Kept in Aquaria

➤ FROGS DEVELOP a disease resembling human leprosy when kept in aquaria, Dr. S. Meryl Rose, of the Smith College zoology faculty, reports in *Science*, (Oct. 5). First symptoms are persistent sores on the toes and red spots on the legs. As the disease progresses, the flesh begins to fall away, and sometimes entire feet are lost. Nervous function is seriously impaired.

The disease can be prevented, Dr. Rose states, by keeping the frogs in water containing fifteen hundredths of one per cent of salt.

Science News Letter, October 19, 1946

BACTERIOLOGY

Colistatin Joins Other Antibiotics Against Germs

➤ DISCOVERY in soil of a new anti-germ chemical that may take its place with the famous antibiotics, streptomycin and penicillin, is announced by G. F. Gause of the Institute of Tropical Medicine, Moscow, in *Science*, (Sept. 27).

Colistatin is the name Dr. Gause gives the new antibiotic. He chose this because the substance stops the growth of a germ called Bacterium coli. Colistatin is produced by a bacillus found in black earth or chernozem soils.

Germs of pneumonia, one kind of dysentery, a paratyphoid germ and staphylococci are also stopped by colistatin. Unlike streptomycin, this new antibiotic merely checks the growth of the germs and does not kill them.

Science News Letter, October 19, 1946

AERONAUTICS

Sandwich Construction Will Decrease Expense

➤ SANDWICH construction in aircraft will make family airplanes inexpensive, the International Congress of Applied Mechanics was told by Dr. Nicholas J. Hoff of the Polytechnic Institute of Brooklyn, N. Y. The low cost is due to the fact that cheap materials such as paper and cork can be used in the sandwich core.

Sandwich construction, usable in the fuselage and supporting surfaces, is made of two thin layers of high strength material between which is a thick layer of an ultra-light core. The faces may be plywood, paper or aluminum alloy; the core is cork, balsa wood or a spongy synthetic material. They are held together with a special glue. Fabrication is rapid; the face, core and glue are put into a mold under pressure and heated for about 20 minutes to set it.

Sandwich type construction eliminates the network of reinforcing elements necessary in today's aluminum planes in which the construction involves a tremendous amount of riveting, Dr. Hoff declared. It has better aerodynamic properties than are possible in the present aluminum construction in high-speed aircraft, he asserted, and greater durability than is possible in fabric covered planes in light aircraft.

Science News Letter, October 19, 1946

ENGINEERING

Save Fuel By Saving Heat

Closing cracks, insulating walls, and cleaning the furnace are ways of stretching the fall fuel supply. Results from heating research are told.

By A. C. MONAHAN

➤ FUELS for heating will dig deep into the family budget this year but, in the average home, increased costs can be offset by cutting fuel and heat wastage.

Smoke-belching chimneys show a waste of natural resources and family funds. Rattling windows and doors indicate the householder is trying to heat up the great outdoors. Proper furnace management will consume the smoke, adding to the heat for the house. A little carpentry, or even old rags, will close the window cracks that permit the rattling and at the same time let the heat escape.

Even in homes without smoking chimneys and rattling windows there are usually many invisible heat losses. Combustible gases generated in the fire pot, unless consumed in the furnace, pass up the flue and their potential heat is lost. Also, in most houses, there are hard-to-find crevices through which hot air escapes. There are tremendous losses through walls not properly insulated and windows without outer storm sashes.

Research on Heating

House heating, incidentally, if comfort and economy are major considerations, is not a simple matter. Scientists and heating engineers are devoting their lives to heating problems. Much money is spent annually in university and engineering laboratories to discover methods of construction which will insure greater comfort to occupants in summer and winter, and better ways to obtain full value of the fuels used.

In recent years, with research pushed by fuel shortages, several fuel-saving furnaces and stoves have been developed, thermostatic heating controls improved, chimney construction studied, new fuels from waste products fabricated and heat distribution methods investigated. Most of the findings are for new homes, or future installation in old homes.

Present householders this winter will use the same old furnaces, with the same old fuels, in the same old houses. There are steps that they can take, however, to save fuel that will help out in this year's budget.

Any householder can get plenty of hints and suggestions for furnace management, heating and heat-saving from many sources, including government agencies. Associations representing heating and ventilating engineers, and others representing the anthracite, the bituminous coal, and the fuel-oil industries, give particularly helpful hints. The advice given is not hit-or-miss, but results from scientific studies and tests.

Fundamentals in home-heating economy include three often-repeated essentials that should be taken care of before the furnace turns from summer idleness to winter use. These are cleaning the heating surfaces within the furnace, filling the crevices in the building through which heat escapes, and having windows fitted with storm sashes.

Soot and hard carbon deposits on the flues within the furnace in which steam is generated or water heated can cut down the efficiency of the furnace as much as 30 per cent. Tight houses, with storm windows and doors, require up to 40 per cent less fuel than similar houses not so protected from heat losses.

Wall insulation, including insulation material in the roof and attic floor, is regarded by many as another essential, but one that the average home-owner can not install himself. University of Illinois scientists state, after several years of study and actual testing, that five times as much heat is transmitted through an uninsulated wall as through an insulated wall.

FURNACE—Laboratory model of the new Williamson furnace, with draft system at rear, is being inspected.

Experimental Houses

This Illinois state institution is among several that are making fundamental studies of home-heating. It has two houses on its campus used for the purpose, and at the present time is building a third. One is a two-story-and-attic colonial house, in use 22 years in studying warm-air heating. Another is heated with a boiler and radiators. The one under construction is a five-room one-story structure of the usual type being built today. It is to be heated by warm air.

The new home is a cooperative project of the University and the National Warm Air Heating and Air Conditioning Association. The university conducts the research; the association pays the bills. The house will be occupied by a non-research family so that it will get normal usage during the tests.

To show the thoroughness of the scientific studies made with these Illinois houses, each house has several miles of electric wiring built into it to connect 200 thermo-couples with a central switchboard. By these, temperatures are taken, not only in the various rooms, but within the walls, floors and roofing.

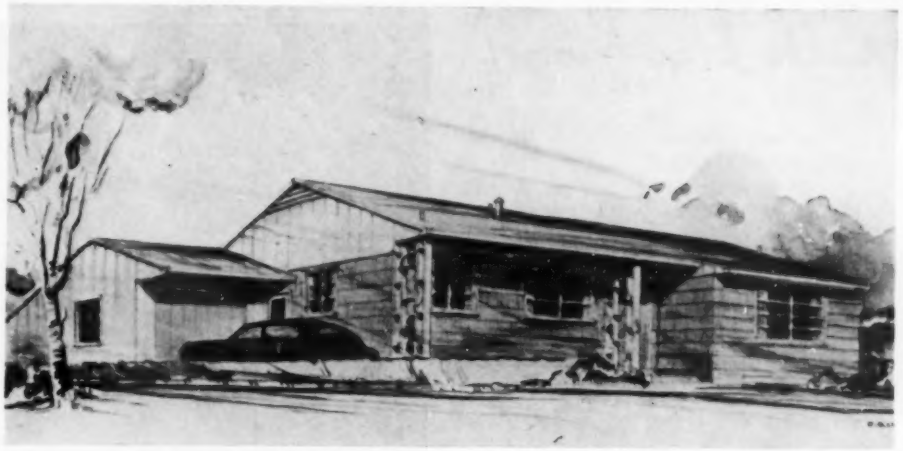
Chimney Construction

Chimney construction, it is found, has a definite bearing on furnace action. Various types of chimney materials and flue sizes are being investigated. The new house will have something new in chimney material; it will be made of molded asbestos instead of the customary brick, tile and mortar.

All studies in home-heating at the University of Illinois are not made in these special houses; some are made in mechanical laboratories. One develop-

ment to come from the engineering department is a smokeless bituminous coal furnace. It can be used with warm-air, steam or hot-water heating. Nearly 100 of them have been built by a manufacturer, and are now being tested in homes throughout the United States. Later, when testing is completed, it will be produced commercially.

Another smokeless furnace, developed by scientists of the Williamson Heater Company, employs principles identical with those employed in the production of coal gas. In this furnace, the gases released by heating and partial combustion can escape only by passing downward through the hot fuel bed, and thence upward through a series of so-called Venturi tubes positioned at either side of the grate. Secondary air, entering these tubes, insures complete combustion.



LABORATORY—New house is being built at the University of Illinois' Home Research Center in Urbana-Champaign to study warm air heating in a typical modern one-story house.

Other Houses for Study

The model houses at the University of Illinois, erected for home-heating studies, are not the only structures of the kind in the country. Commercial homes constructed by building companies have been used by national organizations of heating engineers in studies made under their sponsorship. Some houses, identical otherwise, were built with or without wall insulation, storm windows and other heat-saving measures, so that relative heat losses could be determined. One notable structure is a special home-like building erected to study automatic heat control.

This is a penthouse on top of one of the main buildings of the Honeywell Regulator Company's plant at Minneapolis. It is a two-story structure, 30 by 30 feet, built of average housing material, with 120 thermocouples buried in the walls. This penthouse experiment has resulted in a new automatic control system that regulates temperature within the house.

Heating engineers have long recognized that human beings are unsatisfactory detectors of temperature changes within a home. Control thermostats are in general use in houses heated by fuel oil or gas. Their use with coal burning equipment is much less common. These thermostats, located in a theoretical heating center of the house, work on the on-off principle. When the house is too warm, they shut off the flow of oil or gas; when too cold, they open up in full. The new type eliminates the on-off method, raising or lowering the heat delivery to give constant inside temperatures that vary only a fraction of a degree.

Saving fuel in the home not only decreases the cost of living, but also helps preserve America's natural fuel resources. If 10,000,000 coal-burning homes save a ton a year each, it means a saving of 10,000,000 tons. If 1,000,000 oil-burners each use one barrel less, fuel oil for diesel power plants will be more plentiful, and so will be the supply of gasoline, because this essential aviation and automobile fuel can be made from fuel oil.

Petroleum Reserves

How long the known petroleum reserves of the United States will last at present rates of consumption is a matter of opinion, but estimates by experts vary from 15 to 50 years. Coal reserves will last many hundreds of years, geologists claim, but this does not mean that the better qualities will be available long. It is for this reason that scientists are so active in developing ways of satisfactorily using the poorer grades of coal and lignite.

Scientists are also active in preparing for use as home and factory fuels materials formerly regarded as wastes. As an example, sawdust and wood wastes from the great lumber mills are now being fabricated into blocks with a tar binder.

Waste coal "fines" are also being briquetted. Peat, now little used in America, may become a common fuel. In a European process, peat is masticated in water and formed into tubes which, when air-dried, become a clean fuel suitable for use in homes.

Saving fuel to conserve natural resources for future generations may not be such an appealing argument to many home owners, but saving expenditures from the family budget is another matter.

Science News Letter, October 19, 1946

Tons of pure *fluorine* were produced for war purposes by the development of an electrolysis process, and special containers were made to store it; this chemical element in the past had defied man's efforts to harness it.

A *high-protein* diet of powdered milk and powdered eggs will bring starvation cases to health more rapidly than any other diet now known.

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Do You Know?

The *black widow* spider is an extremely timid creature.

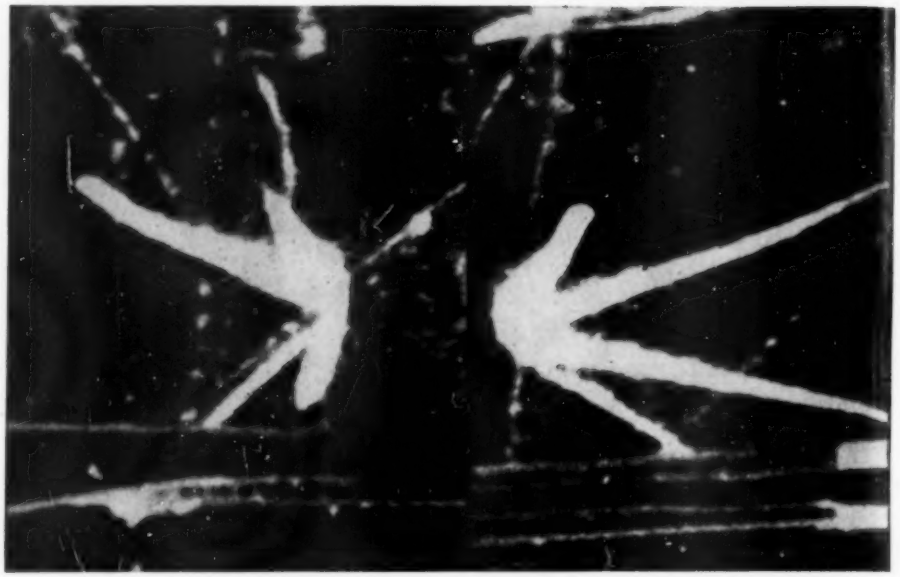
The chemical weed killer, *2, 4-D*, does not harm cows.

The rare gas *xenon* has narcotic effects on men, experimental work reveals.

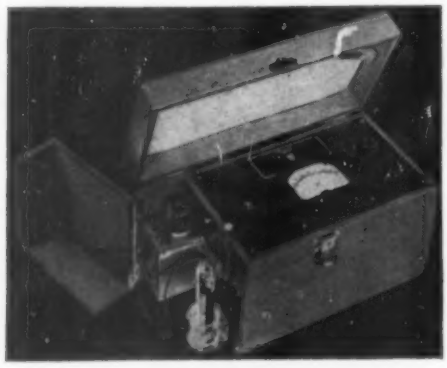
Most of the fertilizing elements in *wood ashes* are in an oxide form and have a sweetening effect on the soil.

One-fourth of the cultivated land under irrigation works constructed by the U. S. Bureau of Reclamation is used for growing *alfalfa*.

Dihydrostreptomycin is a new drug derived from streptomycin that is as active against germs as the older drug and has the added advantage of being more stable.



ATOM-SMASHING—Photographs taken by Dr. Wilson M. Powell, University of California physicist, show the disintegration of an atomic nucleus. Two photographs of the phenomena taken at different angles are shown. Each large point of the star represents an alpha particle. It is assumed that neutrons, which cannot be photographed, are being emitted in the direction away from the alpha particles. It is also assumed that the atomic explosion was caused by a neutron.



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PHOTOGRAPHY

Nuclear Pictures Taken

➤ A PICTORIAL record of atom-smashing in nature, showing such basic subatomic events as the birth and death of basic particles of matter and the complete disintegration of nuclei, was published in the *Physical Review* by a young University of California scientist.

The photographs, probably the most dramatic ever taken of the primordial processes of the universe, were taken on top of Mount Evans, Colo., an altitude of 14,120 feet, where the frequency and intensity of cosmic radiation is much greater than at sea level.

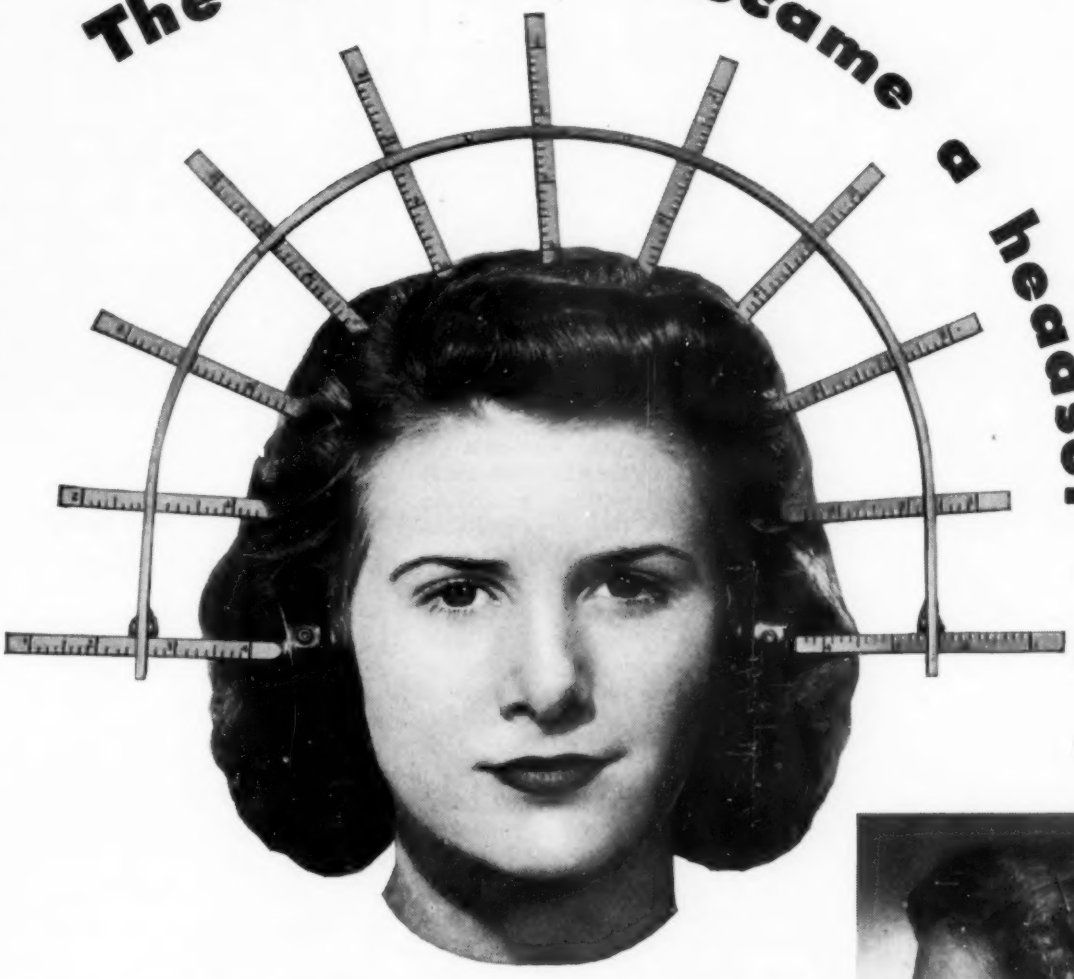
The photographs were taken by Dr. Wilson M. Powell, associate professor of physics, during two expeditions in 1940 and 1941. The results were not published until recently because the war interrupted Dr. Powell's work.

Dr. Powell found an enormous number of neutrons in cosmic rays at high altitude. These neutrons appeared to have a maximum energy of about 200,000,000 electron volts. Their presence was detected photographically only by the disintegration of nuclei. The sudden appearance of a star effect on the photographic plate, with fragments of the nucleus flying in all directions, was set down as the work of a high speed neutron.

The photographs were taken in Wilson cloud chambers, which were filled with argon gas. Five plates of lead were spaced in the chamber to scatter particles going through and to test the penetrating power of the particles. Angle of deflection and penetrating power are clues as to the type of particle making a particular track through the chamber.

Dr. Powell and other University of California scientists hope some of the remarkable subatomic events found in cosmic rays at high altitude may be reproduced in the laboratory when the big new atom smashing machines, the 4,000-ton cyclotron, the synchrotron and the linear accelerator, are completed on the Berkeley campus. Dr. Powell hopes to construct special equipment in which such man-made cosmic radiation may be observed in the laboratory under control conditions.

The hat that became a headset . . .



Telephone operators in New York, Atlanta and Montreal wore the strange head-dress you see pictured above. It's a specially devised gauging instrument — Bell Laboratories scientists used it to measure head contours in designing the new operator's headset.

With the new set, the telephone user can hear the operator more clearly, and she in turn hears better too—through the improved receiver and transmitter. Her voice enters the transmitter at an even level because, as she turns, the mouthpiece moves with her. Neckstrap and horn are eliminated. The whole thing weighs less than six ounces.

The new Bell System headset brings together the latest techniques in telephone voice transmission and the ideas of the operators themselves. It offers them comfort, convenience, and electrical efficiency.

Out of new knowledge has come this novel head telephone fitted to the operator and designed to improve your telephone service.

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BACTERIOLOGY

Block-Busters Blow Disease Germs Apart

➤ MICROSCOPIC block-busters exist which literally blow disease germs apart.

Discovery of this battle strategy of bacteriophage, a minute virus used to treat certain diseases, is announced by Dr. A. P. Krueger, professor of bacteriology at the University of California.

The death blow comes to disease germs within two or three hours after the virus establishes a beachhold within the cell. The virus grows 10,000 to 100,000 times, then bursts through the cell wall, Dr. Krueger estimated from a microscopic study of a bacteriophage attack on staphylococcus, the germ that causes boils.

Bacteriophage strategy interests scientists, because the organism is a simple example of the filterable viruses, others of which cause infantile paralysis and encephalitis.

Results of Dr. Krueger's studies appear in the *Journal of General Physiology*.

Science News Letter, October 19, 1946

AERONAUTICS

Pulsating-Jet Engine To Power Aircraft

➤ A SIMPLE PULSATING-JET engine will furnish cheap auxiliary power to conventional aircraft, can be used at the tips of helicopter blades, power pilotless aircraft and assist glider take-off, L. B. Edelman of the Navy Department has reported to the Society of Automotive Engineers. It is an engine of the type used in some of the Nazi bombs that fell upon London.

The engine as now developed is a simple powerplant, requiring only air, liquid fuel, a shaped tube, some form of check valve, and a sparkplug for starting. It can produce thrust, he said, of up to 900 pounds per square foot with fuel consumption of only about one and one-half pounds an hour.

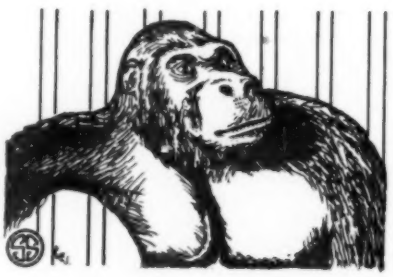
The engine is economical, he continued, yields speeds up to one-half that of sound, requires neither expensive high-temperature alloys nor costly machining operations, and operates on any liquid fuel available without noticeable variation in performance.

Helicopters equipped with these engines at blade tips will be lighter and less complicated, he said.

Science News Letter, October 19, 1946

EVOLUTION

NATURE RAMBLINGS by Frank Thone



Down From the Trees

➤ MAN'S ANCESTORS may have got started toward becoming human simply by growing too big to hang around on the old family tree. If our remoter forebearers really were tree-inhabiting animals (whether they swung by their tails or not) they must have been relatively small. Very few animals that make their homes permanently in the tree-tops weigh more than 15 or 20 pounds, and most of them are much smaller—squirrel-sized rather than monkey sized. Among the heaviest are the sloths—and see how cautious they have to be, to avoid falling to the ground where the jaguars can get them!

True, we commonly picture the great apes, most nearly related to man of all the animals, as tree dwellers—but is the picture a correct one? Zoologists tell us that the biggest and in many ways most nearly human one of the lot, the gorrilla, spends the greater part of its waking hours on the ground. Certainly no gorilla could leap nimbly from branch to branch, as the lighter-bodied monkeys do—the branches just couldn't stand the gaff.

The middleweights among the manlike apes, the chimpanzee and the orangutan, can manage an arboreal existence better than the massive gorilla, but even they are said to descend to ground level pretty frequently. Only the little gibbon, featherweight among anthropoids, is light enough to be completely agile in the treetops.

The less manlike among the apes, like the baboons and drills, are almost wholly ground-dwellers. They are highly agile, but their refuge is among rocks rather than in trees. However, they made the evolutionary mistake of remaining four-footed—or even of becoming actually more quadrupedal than their putative monkey-like ancestors.

Any animal that comes down out of the trees to live upon the ground must necessarily leave the forest more or less behind. In the perpetual twilight that reigns on the floor of a mature, closed forest few food plants have a chance to grow. To find something to eat, the quondam treetop-dweller must haunt the streamside openings, the brush-grown clearings, the tapering edges of the forest—or even venture boldly into the open grassland. Away from tree cover, there is a premium on speed (hence, presumably, baboons and the like) or on an erect posture giving better scope for vision and more chance to let the fingered forefeet become hands—hence, perhaps, man.

Science News Letter, October 19, 1946

CHEMISTRY

Spectrograph Gives Fast Quantitative Analysis

➤ FASTER METHODS of analyzing metals, particularly the scrap collected from farms, homes and shops during the war, were found by the use of the spectrograph, and the processes promise to become routine practice in the future. Knowledge of scrap content is essential; a little tin in steel, for instance, makes it unusable for many purposes.

Details relative to the research conducted and the methods developed are now revealed in a report recently issued by the Department of Commerce, prepared by D. H. Deik of Johns Hopkins University. Though direct-reading photoelectric methods still present some problems, the fundamental processes underlying spectrographic analysis have now been worked out, he declares.

The report outlines the essential steps in the process. First, a sample of the metal is brought into a light source and partially vaporized by electrical excitation. The light becomes characteristic for the composition.

This light is sent through a spectrograph and the spectrum formed is photographed. This spectrum shows the lines characteristic of the metals included. The photograph, after developing, is analyzed in a micro-photometer, which measures the intensities of key lines. From these intensities, the amounts of the various elements are determined.

Science News Letter, October 19, 1946

METALLURGY

Calcium Carbide Removes Sulfur from Molten Iron

➤ SULFUR, the chemist's standby in a thousand operations, is one of the worst headaches of the metallurgist, particularly the worker in ferrous metals. It can cause sudden and unpredicted flaws and failures in iron and steel castings and forgings; and as a rule its presence in the walls of chemical reaction vessels is intolerable. But getting it out of raw iron is far from an easy job.

Among means suggested has been the use of fused calcium carbide. However, calcium carbide is very much lighter than iron, and its melting point is considerably higher. To overcome this dilemma, John J. Crowe of Westfield, N. J., puts his lumps of calcium carbide in a crucible with a closed top but an open bottom, which he suspends or floats on top of a ladle of molten iron. He melts the carbide by means of an electric arc, maintaining it at its own fusion point.

The continuous boiling motion of the molten metal brings every particle of it eventually into contact with the small mass of fused carbide, which soaks it up like a sponge, converting the sulfur into calcium sulfide. This rises to the top as a slag and may be removed.

Mr. Crowe has just been granted U. S. patent 2,409,020 on this process, and has assigned his rights to the Air Reduction Company, Inc.

Science News Letter, October 19, 1946

CHEMISTRY

New Variety of DDT Kills Mosquito Larvae

➤ A VARIETY of DDT that kills the larvae of malaria-bearing mosquitoes but is ineffective against adult mosquitoes, house-flies, and body lice has been discovered.

Of possible use in fighting mosquito wigglers in ditches and ponds where it is not desired to harm other insects, the substance is what is called an isomer or rearrangement of the atoms in the ordinary DDT molecule.

The unusual kind of DDT is mixed in with commercial production of the effective DDT. The researches are reported to *Science* (Oct. 11) by a U. S. Department of Agriculture group, Stanley J. Cristol, H. L. Haller, and A. W. Lindquist.

Science News Letter, October 19, 1946

Books of the Week

ANALYTICAL EXPERIMENTAL PHYSICS—Harvey B. Lemon and Michael Ference, Jr.—*Univ. of Chicago Press,* 588 p., illus., diagrs., tables and charts, $8. The authors have revised the book in the light of users' suggestions and new developments, largely stimulated through war work, in physics. The result is additions in the fields of radio, radar, nucleonics, isotopes, artificial radioactivity, and electrical units.

ANIMAL BIOLOGY—Robert H. Wolcott—*McGraw-Hill,* 719 p., illus., diagrs., and tables, $4. A beginning text of the biology of animals including man, it outlines the fundamental principles of physiology, microscopic and macroscopic structures, classification of the animal kingdom and the laws of evolution and heredity. Simple descriptive keys with many figures of all the orders of insects, birds, and mammals have been included.

CAREERS IN PHOTOGRAPHY—C. B. Neblette—*Ziff-Davis,* 182 p., illus., $2.50. A specific guide for everyone interested in the many opportunities in the photographic field, including suggestions for getting started in the profession and an outline of the training necessary for success.

A CENSUS OF THE DETERMINABLE GENERA OF THE STEGOCEPHALIA—E. C. Case—*The American Philosophical Society,* 420 p., diagrs., charts, and tables, paper, $1.25. Transactions of the American Philosophical Society for promoting useful knowledge. New series—Vol. XXXV, Part IV.

HOW BIG IS BIG? FROM STARS TO ATOMS: A Yardstick to the Universe—Herman and Nina Schneider—*William Scott, Inc.,* 42 p., illus., $1.50. This book is the much-needed answer to the challenging questions all children ask about size. The authors have cut the concepts of bigness and smallness down to a seven-year-old's size and experience level.

HUMAN FACTORS IN AIR TRANSPORT DESIGN—Ross A. McFarland—*McGraw-Hill,* 670 p., tables, graphs, illus., and diagrs., $6. The book represents an unusually complete compilation and interpretation of biological data which the aeronautical sciences can use to improve the efficiency of air crews and the safety and comfort of air travelers.

THE MYTH OF THE STATE—Ernst Cassirer—*Yale Univ. Press,* 303 p., $3.75. In this book the author has been able to bring together the great resources of learning and insight that accumulated over a long lifetime, and to examine one of the central problems of modern man. This is a vastly learned book that can be read by the general reader with no special training in philosophy or the other disciplines the author makes use of.

OCEAN ATMOSPHERIC-ELECTRIC RESULTS—O. W. Torreson, O. H. Gish, W. C. Parkinson, G. R. Wait—*Carnegie Inst.,* 178 p., charts, graphs, tables and illus., $2.25 paper, $2.75 cloth. Scientific Results of Cruise VII of the *Carnegie* during 1928-1929 under Command of Captain J. P. Ault. Publ. 568.

SOME COMMON MUSHROOMS AND HOW TO KNOW THEM—Vera K. Charles—*U. S. Dept. of Agr.,* 60 p., illus., paper, 20 cents. Circular No. 143.

TEXTILES OF HIGHLAND GUATEMALA—Lila M. O'Neale—*Carnegie Inst.,* 319 p., 130 illus., $5 paper, $5.50 cloth. Publ. 567.

WHAT'S IN THE TRUNK?—Irene Lorentowicz—*Roy Pub.,* 28 p., illus., $1.50. This is a picture book with a surprise. The story is about two children wondering what their father, who is a pilot, sees all over the world. When he comes home one day, they find out. Children of all ages will enjoy the various national costumes which are depicted in the story.

Science News Letter, October 19, 1946

ASTRONOMY

Ninth Magnitude Comet Is Spotted in Cetus

➤ A FAINT COMET has been spotted in the constellation of Cetus, the whale, now visible in the southeast. According to a cablegram received at Harvard Observatory from Dr. J. S. Paraskevopoulos, superintendent of Harvard's Southern Astronomical Station, the comet is of the ninth magnitude, far too faint to be seen with the naked eye or binoculars.

The heavenly object may be known as Comet Bester after its discoverer. Or it may be found to be the recurrent Comet Temple 2, scheduled to revisit the vicinity of the earth this fall. Calculations show that Comet Temple, last seen in 1930, is due to be in the constellation of Cetus at this time. The comet made a fairly close approach to Jupiter in 1943, and it may be that the planet pulled it slightly off its course. This accounts for the fact that it was found away from its predicted position.

Science News Letter, October 19, 1946

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·New Machines And Gadgets·

⚙ *CARVING AID, to hold the ham or turkey being served, is a finished wood platter with an upright metal post that carries a movable arm. The arm, arched upward, extends over the meat, and can be lowered so that sharp points on its under side engage the roast.*

Science News Letter, October 19, 1946

⚙ *BABY HOLDER keeps a sitting infant from falling out of his chair. It is a single piece of cloth, with two holes through which the baby's legs project. Fitting around the front and under the body, it is tied by cords to the back of the seat.*

Science News Letter, October 19, 1946

⚙ *ANKLE BRACELETS for professional dancers throw light upward over the calves of the legs from tiny concealed electric tubes. Each bracelet consists of a ring of insulating material within which is a series of dry cells separated by the bulbs.*

Science News Letter, October 19, 1946

⚙ *COMPRESSED coffee cakes, each intended to make three cups of coffee, are marketed in heat-sealed cellophane to keep the flavor fresh. With air and water extracted, the cakes occupy slightly more than half the space required for the loose material.*

Science News Letter, October 19, 1946

⚙ *CAMERA TRANSIT, for use in surveying land, combines a camera of special design and a surveyor's transit. The camera is inserted, as shown in the picture, between the top of a tripod and the transit telescope. The optical axis of the telescope is parallel to that of the camera.*

Science News Letter, October 19, 1946

⚙ *INFRA-RED radiation detector, a small instrument easily carried by a soldier, picks up and makes invisible infrared signals visible, but does not form images as in the snooperscope. A lead-sheathed compartment within contains radioactive material, the power source of the device.*

Science News Letter, October 19, 1946

⚙ *PIN-CUSHION wristlet, homemade, is a pad an inch thick and three inches long, filled with wool clipping, and held on the back of the wrist with an elastic band. It is especially useful in hemming and fitting, where the pin supply should move with the worker.*

Science News Letter, October 19, 1946

⚙ *NEW ERASER takes away particles from the surface as created. A circular eraser is connected by a flexible tube to a stand on the table which contains a suction fan. As the power-driven eraser revolves, the particles are drawn through the tube to a receptacle.*

Science News Letter, October 19, 1946

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 333. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

Question Box

ANTHROPOLOGY

What new claim to fame has the Melbourne man? p. 245.

ASTRONOMY

How did astronomers "see" the meteors in cloudy sections of the country? p. 243.

BACTERIOLOGY

Name another antibiotic discovered in soil. p. 249.

BOTANY

What is peculiar about Tristeza's effect on trees? p. 247.

CHEMISTRY

To what new series of compounds did fluorine research lead? p. 248.

What compound will remove sulfur from molten iron? p. 255.

What faster method of quantitative analysis has been developed? p. 254.

EDUCATION

What great treat did the U. S. Navy give 91 American boys? p. 246.

ENGINEERING

In what sort of laboratories is heating research being done? p. 250.

HERPETOLOGY

Can a rattlesnake poison another rattlesnake? p. 248.

SEISMOLOGY

How does the Santo Domingo earthquake compare with other great quakes? p. 248.

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Of what danger to frogs is keeping them in an aquarium? p. 249.

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